

WHAT IS CLAIMED IS:

1. A power transfer apparatus provided between
5 an input shaft and an output shaft for selectively
changing the speed of the output shaft relative to the
speed of the input shaft, the power transfer apparatus
comprising:

a clutch having a clutch inner hub fixed to the input
10 shaft, a clutch guide, a plurality of clutch discs
attached to the clutch inner hub, a plurality of clutch
plates attached to the clutch guide so as to be disposed
alternately with the clutch discs, a clutch piston and
biasing unit for biasing the clutch piston in a direction
15 in which the clutch discs engage with the clutch plates;

a transmission brake serially disposed in an axial
direction of the clutch and having a brake inner hub
coupled with the clutch piston at one end thereof, a
plurality of brake discs coupled with the brake inner
20 hub and a plurality of brake plates coupled with the
casing in such a manner as to be disposed alternately
with the brake discs;

an actuator serially disposed in an axial direction
of the transmission brake for disengaging the clutch
25 against force of the biasing unit at the same time of

activating the transmission brake;

and

a planetary carrier sub-assembly serially disposed in the axial direction of the clutch and having
5 a planetary carrier rotatably disposed around the input shaft and the output shaft and coupled with the clutch guide, a first pinion gear rotatably carried on the planetary carrier, a second pinion gear having the number of teeth which is different from that of the first pinion
10 gear, a first sun gear fixed to the input shaft and meshing with the first pinion gear and a second sun gear fixed to the output shaft and meshing with the second pinion gear;

15 2. A power transfer apparatus as set forth in Claim 1, wherein the clutch further comprises a one-way clutch interposed between the clutch inner hub and the clutch guide.

20 3. A power transmission apparatus as set forth in Claim 1, wherein the clutch piston is disposed within a space defined between the clutch guide and a radial out side of the clutch plates so as to be extended in the axial direction of the clutch.

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4. A power transfer apparatus as set forth in Claim 1, wherein the first and second pinion gears are formed integrally.

5 5. A power transfer apparatus as set forth in Claim 1, wherein the input shaft and the output shaft are coaxially disposed.

6. A power transfer apparatus as set forth in
10 Claim 1, further comprising;

a casing accommodating at least a portion of the input shaft and at least a portion of the output shaft, the clutch, the transmission brake, the actuator and the planetary carrier sub-assembly.

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7. A power transfer apparatus as set forth in Claim 1, further comprising;

an oil pump sub-assembly for activating the actuator.

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8. A power transfer apparatus as set forth in Claim 7, wherein the oil pump sub-assembly is serially disposed in the axial direction of the output shaft.